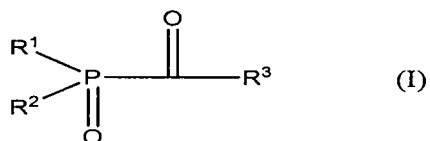


AMENDMENTS TO THE CLAIMS

1. (Currently amended) An energy curable intaglio security document printing ink, curing by free radical, acrylate chemistry, and including a photoinitiator comprising an acylphosphine oxide, whereby the security document printing ink does not fluoresce in at least the visible light wavelength region when exposed to ultraviolet light.

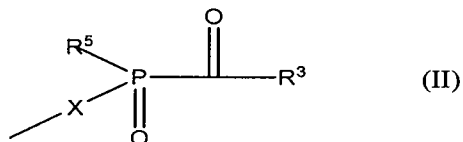
2. (Original) A printing ink according to Claim 1, in which said acylphosphine oxide is a compound of formula (I):



in which:

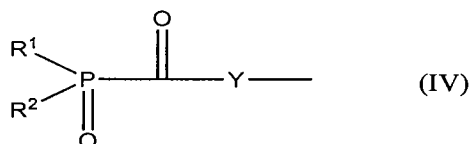
R¹ and R² are independently selected from C₁ – C₁₂ alkyl groups, C₃ – C₇ cycloalkyl groups, aryl groups, aralkyl groups, heterocyclic groups having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom and groups of formula –COR³,

or R² represents a group of formula –OR⁴, where R⁴ represents a C₁ – C₆ alkyl group, an aryl group, an aralkyl group or a cationic group or atom, or R² represents a group of formula (II):



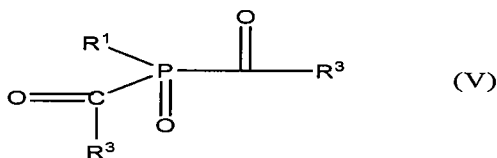
where X represents a C₁ – C₁₈ alkylene group or a biphenyldiyl group, and R⁵ represents any of the groups represented by R¹ or a group of formula –OR⁴, and

R³ represents a C₁ – C₆ alkyl group, an aryl group, a heterocyclic group having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom, or a group of formula (IV):



where Y represents a C₁ – C₁₈ alkylene group a phenylene group, a cyclohexylene group or a biphenyldiyl group.

3. (Original) A printing ink according to Claim 2, in which said acylphosphine oxide is a compound of formula (V):



in which:

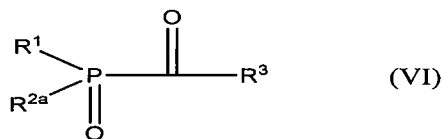
R¹ represents a C₁ – C₁₂ alkyl group, a cyclohexyl group or an aryl group; and

R³ is as defined in Claim 2.

4. (Original) A printing ink according to Claim 3, in which each R³ is independently selected from phenyl groups and phenyl groups having from 1 to 4 halogen and/or C₁ – C₆ alkyl and/or C₁ – C₆ alkoxy substituents.

5. (Previously presented) A printing ink according to Claim 4, in which R¹ represents a C₁ – C₁₂ alkyl group or a phenyl group which is unsubstituted or has from 1 to 3 C₁ – C₆ alkyl or alkoxy substituents.

6. (Original) A printing ink according to Claim 2, in which said acylphosphine oxide is a compound of formula (VI):

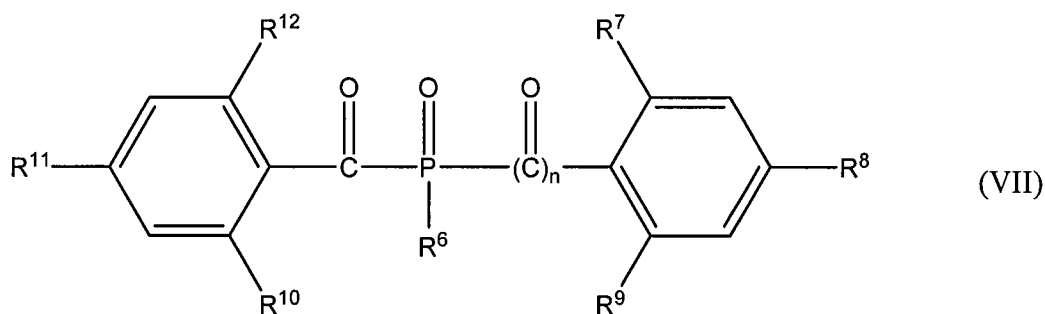


in which:

R¹ and R³ are as defined in Claim 2; and

R^{2a} represents a C₁ – C₁₂ alkyl group, a C₃ – C₇ cycloalkyl group, an aryl group, an aralkyl group, a heterocyclic group having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom, or a group of formula — OR⁴, where R⁴ is defined in Claim 2.

7. (Original) A printing ink according to Claim 2, in which said acylphosphine oxide is a compound of formula (VII):



in which:

n is 0 or 1;

R⁶ represents a C₁ – C₁₂ alkyl group, a C₁ – C₆ alkoxy group, a phenyl group or a phenyl group having from 1 to 4 substituents selected from C₁ – C₆ alkyl groups, C₁ – C₆ alkoxy groups and halogen atoms; and

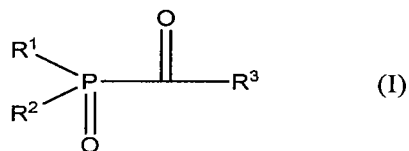
R⁷, R⁸, R⁹, R¹⁰, R¹¹ and R¹² are the same as or different from each other and each represents a hydrogen atom, a C₁ – C₆ alkyl group, a C₁ – C₆ alkoxy group or a halogen atom.

8. (Original) A printing ink according to Claim 2, in which said acylphosphine oxide is 2,4,6-trimethylbenzoyl diphenylphosphine oxide, bis(2,4,6-trimethylbenzoyl) phenylphosphine oxide, ethyl 2,4,6-trimethylbenzoyl diphenylphosphinate or bis(2,6-dimethoxybenzoyl)-2,4,4-trimethylpentylphosphine oxide.

9. (Currently amended) A method of producing a security document, which comprises ~~intaglio~~ printing on a substrate which does not fluoresce in at least the visible region under ultraviolet light using an intaglio security document printing ink, curing by free radical acrylate chemistry, and which security document printing ink includes a photoinitiator comprising an acylphosphine oxide and which security document printing ink does not fluoresce in at least the visible light wavelength region when exposed to ultraviolet light, and curing the ink by exposure to a source of radiant energy.

10. (Original) A method according to Claim 9, in which said radiant energy is ultraviolet.

11. (Previously presented) A method according to Claim 10, in which said acylphosphine oxide is a compound of formula (I):

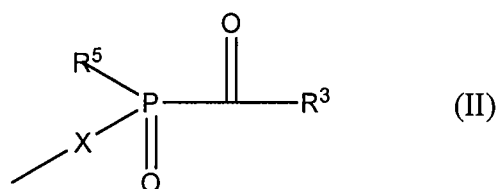


in which:

R¹ and R² are independently selected from C₁ – C₁₂ alkyl groups, C₃ – C₇ cycloalkyl groups, aryl groups, aralkyl groups, heterocyclic groups having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom and groups of formula –COR³,

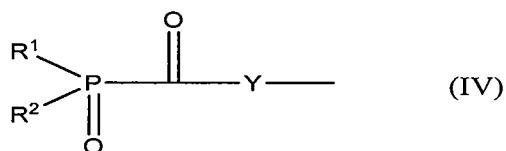
or R² represents a group of formula –OR⁴, where R⁴ represents a C₁ – C₆ alkyl group,

an aryl group, an aralkyl group or a cationic group or atom, or R² represents a group of formula (II):



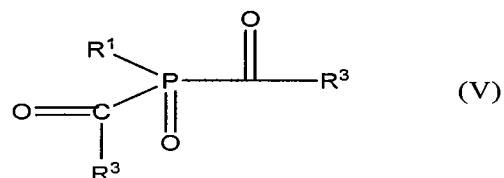
where X represents a C₁ – C₁₈ alkylene group or a biphenyldiyl group, and R⁵ represents any of the groups represented by R¹ or a group of formula –OR⁴, and

R³ represents a C₁ – C₆ alkyl group, an aryl group, a heterocyclic group having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom, or a group of formula (IV):



where Y represents a C₁ – C₁₈ alkylene group a phenylene group, a cyclohexylene group or a biphenyldiyl group.

12. (Original) A method according to Claim 11, in which said acylphosphine oxide is a compound of formula (V):



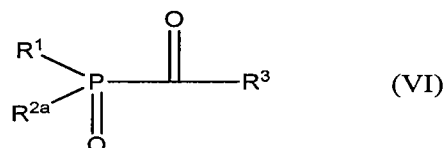
in which:

R¹ represents a C₁ – C₁₂ alkyl group, a cyclohexyl group or an aryl group; and R³ is as defined in Claim 11.

13. (Original) A method according to Claim 12, in which each R³ is independently selected from phenyl groups and phenyl groups having from 1 to 4 halogen and/or C₁ – C₆ alkyl and/or C₁ – C₆ alkoxy substituents.

14. (Previously presented) A method according to Claim 13, in which R¹ represents a C₁ – C₁₂ alkyl group or a phenyl group which is unsubstituted or has from 1 to 3 C₁ – C₆ alkyl or alkoxy substituents.

15. (Original) A method according to Claim 11, in which said acylphosphine oxide is a compound of formula (VI):

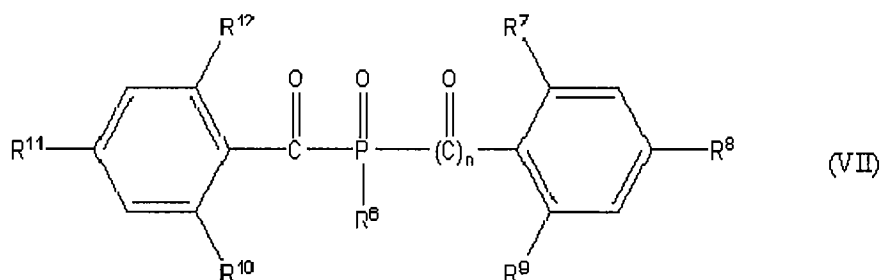


in which:

R¹ and R³ are as defined in Claim 11; and

R²ᵃ represents a C₁ – C₁₂ alkyl group, a C₃ – C₇ cycloalkyl group, an aryl group, an aralkyl group, a heterocyclic group having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom, or a group of formula –OR⁴, where R⁴ is defined in Claim 11.

16. (Original) A method according to Claim 11, in which said acylphosphine oxide is a compound of formula (VII):



in which:

n is 0 or 1;

R⁶ represents a C₁ – C₁₂ alkyl group, a C₁ – C₆ alkoxy group, a phenyl group or a phenyl group having from 1 to 4 substituents selected from C₁ – C₆ alkyl groups, C₁ – C₆ alkoxy groups and halogen atoms; and

R⁷, R⁸, R⁹, R¹⁰, R¹¹ and R¹² are the same as or different from each other and each represents a hydrogen atom, a C₁ – C₆ alkyl group, a C₁ – C₆ alkoxy group or a halogen atom.

17. (Previously presented) A method according to Claim 11, in which said acylphosphine oxide is 2,4,6-trimethylbenzoyl diphenylphosphine oxide, bis(2,4,6-trimethylbenzoyl)phenylphosphine oxide, ethyl 2,4,6-trimethylbenzoyl diphenylphosphinate or bis(2,6-dimethoxybenzoyl)-2,4,4-trimethylpentylphosphine oxide.

18. (Previously presented) A method according to Claim 9, in which the substrate is a paper.

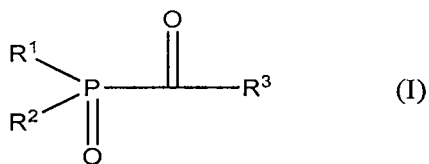
19. (Canceled)

20. (Currently amended) A method according to Claim ~~[[19]]~~ 9, in which the security document is a banknote.

21. (Canceled)

22. (Previously presented) A method according to Claim 12, in which R¹ represents a C₁ – C₁₂ alkyl group or a phenyl group which is unsubstituted or has from 1 to 3 C₁ – C₆ alkyl or alkoxy substituents.

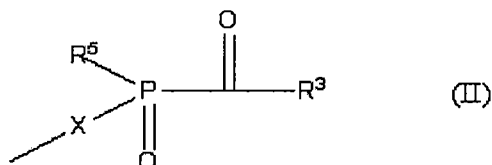
23. (Previously presented) A method according to Claim 9, in which said acylphosphine oxide is a compound of formula (I):



in which:

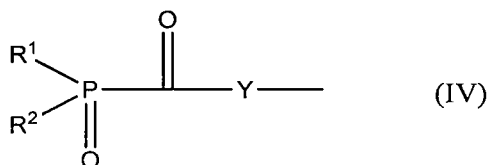
R¹ and R² are independently selected from C₁ – C₁₂ alkyl groups, C₃ – C₇ cycloalkyl groups, aryl groups, aralkyl groups, heterocyclic groups having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom and groups of formula –COR³,

or R² represents a group of formula –OR⁴, where R⁴ represents a C₁ – C₆ alkyl group, an aryl group, an aralkyl group or a cationic group or atom, or R² represents a group of formula (II):



where X represents a C₁ – C₁₈ alkylene group or a biphenyldiyl group, and R⁵ represents any of the groups represented by R¹ or a group of formula –OR⁴, and

R³ represents a C₁ – C₆ alkyl group, an aryl group, a heterocyclic group having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom, or a group of formula (IV):



where Y represents a C₁ – C₁₈ alkylene group a phenylene group, a cyclohexylene group or a biphenyldiyl group.

24. (Previously presented) A printing ink according to Claim 3, in which R¹ represents a C₁ – C₁₂ alkyl group or a phenyl group which is unsubstituted or has from 1 to 3 C₁ – C₆ alkyl or alkoxy substituents.